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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/726,747	12/02/2003	Uday R. Savagaonkar	5038-312	6815
32231	7590	03/08/2006	EXAMINER	
MARGER JOHNSON & MCCOLLOM, P.C. 210 SW MORRISON STREET, SUITE 400 PORTLAND, OR 97204			HOLLINGTON, JERMELE M	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/726,747

Applicant(s)

SAVAGAONKAR ET AL.

Examiner

Jermele M. Hollington

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because it contains the word "means" inside the paragraph (see underline above). Correction is required. See MPEP § 608.01(b).

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Hembree et al (6218848).

Regarding claim 1, Hembree et al disclose [see Fig. 3] a test method, comprising: setting an overdrive [via test system 16]; measuring [via resistivity measuring circuit 38] a contact resistance of at least one channel (electrical paths 34) in each of a plurality of dies (dice 12) on a wafer (wafer 10); computing [via tester 26] a per channel standard deviation responsive to

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measuring the contact resistance [via resistivity measuring circuit 38]; comparing [tester 26] the standard deviation on the at least one channel to a threshold; and increasing [tester 26] the overdrive responsive to comparing the standard deviation.

Regarding claim 2, Hembree et al disclose measuring the contact resistance [via resistivity measuring circuit 38] on the at least one channel (electrical path 34) comprises: forcing [via tester 26] a current through the at least one channel (electrical path 34); measuring [via test circuitry 33] a voltage on the at least one channel (electrical path 34); and calculating [via test circuitry 33] the contact resistance responsive to the forcing and measuring.

Regarding claim 3, Hembree et al disclose measuring [via resistivity measuring circuit 38] the contact resistance comprises measuring [via resistivity measuring circuit 38] the contact resistance on channels on each of the plurality of dies (die 12).

Regarding claim 4, Hembree et al disclose measuring [via resistivity measuring circuit 38] the contact resistance comprises measuring [via resistivity measuring circuit 38] contact resistance on a group of channels (electrical paths 34) on each of the plurality of dies (12).

Regarding claim 5, Hembree et al disclose measuring [via resistivity measuring circuit 38] the contact resistance comprises measuring [via resistivity measuring circuit 38] the contact resistance of all of the dies (12) on the wafer (10).

Regarding claim 6, Hembree et al disclose measuring [via resistivity measuring circuit 38] the contact resistance comprises measuring [via resistivity measuring circuit 38] the contact resistance of a group of dies (12) on the wafer (10).

Regarding claim 7, Hembree et al disclose establishing a bare contact (contacts 22) with the at least one channel on each of the plurality of dies (12) prior to setting the overdrive.

Regarding claim 8, Hembree et al disclose comparing [via test circuitry 33] the overdrive to an overdrive limit prior to measuring [via resistivity measuring circuit 38] the contact resistance.

Regarding claim 9, Hembree et al disclose increasing [via tester 26] the overdrive if the standard deviation on the at least one channel (electrical path) of each of the plurality of dies (12) is less than the threshold.

Regarding claim 10, Hembree et al disclose repeating measuring [via resistivity measuring circuit 38] the contact resistance and computing [via tester 26] the standard deviation responsive to comparing the standard deviation.

Regarding claim 11, Hembree et al disclose [see Fig. 3] a test apparatus, comprising: means [test system 16] for setting an overdrive; means [via resistivity measuring circuit 38] for measuring a contact resistance on each of a plurality of dies (12) in a wafer (wafer 10); means [via tester 26] for computing a standard deviation for each contact resistance measured responsive to the means [via resistivity measuring circuit 38] for measuring the contact resistance; and means [via tester 26] for increasing the overdrive responsive to the means [via tester 26] for computing the standard deviation.

Regarding claim 12, Hembree et al disclose means [via resistivity measuring circuit 38] for measuring the contact resistance includes means [via resistivity measuring circuit 38] for measuring a contact resistance on at least one channel (electrical path 34) in each of the plurality of dies (12).

Regarding claim 13, Hembree et al disclose means [probe card 20] for establishing a bare contact (contacts 22) with each of the plurality of dies (12) on the wafer (10).

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Regarding claim 14, Hembree et al disclose means [via test circuitry 33] for comparing the overdrive to an overdrive limit prior to measuring [via resistivity measuring circuit 38] the contact resistance.

Regarding claim 15, Hembree et al disclose means [via tester 26] for increasing the overdrive if the standard deviation is less than a predetermined threshold.

Regarding claim 16, Hembree et al disclose [see Fig. 3] a wafer test system (test system 16), comprising: a tester (tester 26) capable of generating wafer test signals; a wafer (wafer 10) including a plurality of dies (dice 12), each die (12) having a plurality of channels; a probe head (probe card 20) including a plurality of pins (contacts 22) capable of probing the plurality of channels on each of the plurality of dies (12) on the wafer (10); and a chuck (chuck 24) capable of placing the wafer (10) in contact with the probe head (20); where the tester (26) is capable of: communicating an overdrive to the chuck (24), the chuck (24) moving the wafer (10) towards the probe head (20) responsive to the overdrive; measuring [via resistivity measuring circuit 38] a contact resistance of at least one channel in each of the dies (12) of the wafer (10) using the probe head (20); computing [via test circuitry 33] a per channel standard deviation responsive to measuring the contact resistance, comparing [via test circuitry 33] the standard deviation on the at least one channel to a threshold; and increasing the overdrive responsive to the comparison.

Regarding claim 17, Hembree et al disclose the tester (26) is capable of measuring the contact resistance by: forcing a current through the at least one channel (electrical path 34); measuring a voltage on the at least one channel (34); and calculating the contact resistance [via resistivity measuring circuit 38] responsive to the forcing and measuring.

Regarding claim 18, Hembree et al disclose the tester (26) is capable of measuring the contact resistance by measuring [via resistivity measuring circuit 38] the contact resistance on all channels on each of the plurality of dies (12).

Regarding claim 19, Hembree et al disclose the tester (26) is capable of measuring the contact resistance by measuring [via resistivity measuring circuit 38] the contact resistance on a group of channels on each of the plurality of dies (12).

Regarding claim 20, Hembree et al disclose the probe head (20) is capable of establishing a bare contact (22) with all channels on each of the plurality of dies (12) on the wafer (10) prior to the tester (26) setting the overdrive.

Regarding claim 21, Hembree et al disclose the tester (26) is capable of comparing the overdrive to a limit prior to measuring the contact resistance.

Regarding claim 22, Hembree et al disclose the tester (26) is capable of increasing the overdrive if the standard deviation on all channels is less than the threshold.

Regarding claim 23, Hembree et al disclose the tester (26) is capable of repeating measuring the contact resistance and computing the standard deviation responsive to comparing the standard deviation.

Regarding claim 24, Hembree et al disclose [see Fig. 3] an article (test system 16) comprising a storage medium (tester 26) having stored thereon instructions, that, when executed by at least one device, result in: setting an overdrive [via test system 16]; measuring [via resistivity measuring circuit 38] a contact resistance of at least one channel (electrical paths 34) in each of a plurality of dies (dice 12) on a wafer (wafer 10); computing [via tester 26] a per channel standard deviation responsive to measuring the contact resistance [via resistivity

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measuring circuit 38]; comparing [tester 26] the standard deviation on the at least one channel to a threshold; and increasing [tester 26] the overdrive responsive to comparing the standard deviation.

Regarding claim 25, Hembree et al disclose measuring the contact resistance [via resistivity measuring circuit 38] on the at least one channel (electrical path 34) comprises: forcing [via tester 26] a current through the at least one channel (electrical path 34); measuring [via test circuitry 33] a voltage on the at least one channel (electrical path 34); and calculating [via test circuitry 33] the contact resistance responsive to the forcing and measuring.

Regarding claim 26, Hembree et al disclose establishing a bare contact (contacts 22) with the at least one channel on each of the plurality of dies (12) prior to setting the overdrive.

Regarding claim 27, Hembree et al disclose comparing [via test circuitry 33] the overdrive to an overdrive limit prior to measuring [via resistivity measuring circuit 38] the contact resistance.

Regarding claim 28, Hembree et al disclose increasing [via tester 26] the overdrive if the standard deviation on the at least one channel (electrical path) of each of the plurality of dies (12) is less than the threshold.

Regarding claim 29, Hembree et al disclose repeating measuring [via resistivity measuring circuit 38] the contact resistance and computing [via tester 26] the standard deviation responsive to comparing the standard deviation.



***Conclusion***

***Response to Arguments***

5. Applicant's arguments filed Dec. 20, 2005 have been fully considered but they are not persuasive.

The applicants' argue: "But nowhere does Hembree disclose that its tester 26 or circuit 38 compute a per channel standard deviation much less computing a per channel standard deviation responsive to measuring the contact resistance as recited. Hembree never once mentions making a standard deviation computation."

In response to the above arguments, In MPEP, it states: "Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003). In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). See also In re Zletz, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) ("During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow.... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed.... An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.")." In view of the above statement, the applicants in the claims have not provided what is meant by "standard deviation". The examiner has established that resistivity measuring circuit

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38, which is located inside tester 26, measures the contact resistance in the dice 12 of the wafer 10 via electrical path 34. With that in mind, it appears that Hembree's tester could compute the standard deviation of the contact resistance of the die on the wafer.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

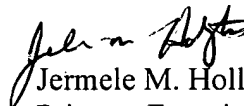
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (571) 272-1960. The examiner can normally be reached on M-F (9:00-4:30 EST) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (517) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jermele M. Hollington  
Primary Examiner  
Art Unit 2829

JMH  
March 3, 2006